

DDA - CDA
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30 January 1961

MEMORANDUM FOR THE RECORD

SUBJECT : U-2 In-Flight Refueling Conference

1. On 26 January 1961, a meeting was held at Project Headquarters to discuss the in-flight refueling modification to the U-2C aircraft. Present were [REDACTED] technical advisor for tanker operation, Lt. Col. [REDACTED] Project Manager AFM. 25X1A

2. There do not appear to be any technical problems with the modification. The necessary plumbing is on hand. The relocation of certain items of equipment to provide access for the refueling receptacle and lines has been packaged on top of the airframe. The fuel lines are compatible with fuel transfer rates from the tanker. No requirement exists to modify the tanker for transporting or transferring our special fuel. LAC will investigate whether or not the use of our fuel in the tanker will cause leaks around the O-ring seals. This investigation is in the nature of a cross check since it is believed that no problem exists. Tank purge of the U-2C is not required. It is not necessary to reduce the fast elevator trim rate of the U-2C mentioned in 3P207, Appendix A, dated 22 October 1960, since the pilot can easily overcome the out-of-trim forces encountered. The fast trim is desired for the mission profile.

3. If the results of the flight test program show a requirement for a fuel quantity indicating system, technical problems will be encountered. Due to the tank design, the change in wing bending in flight that cannot be accurately duplicated on the ground, and the small difference in float levels of the main and aux tanks, fourteen (14) pickups would be required for the system. The necessary cutting and beefup of structure would weigh approximately 31 pounds, and the system would be accurate to only 1/2 percent.

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4. The three most important operational problems are: (a) rendezvous; (b) pilot visibility during refueling; and (c) accurate fuel readings after completion of refueling. It is the desire that all rendezvous be passive. At present, there does not seem to be a satisfactory solution to this problem. The "buddy system" offers a possible solution but only at a high sacrifice of tanker range. This concept cannot be used when refueling is desired at a post strike location. If the refueling is accomplished in an area normally used by SAC, there may not be any objection to using radio communication. With radio transmissions permitted, there would be no need to compromise U-2 performance with additional weights of added equipment. The standard U-2 communication radio and the tanker UHF/HF equipment are adequate to effect the rendezvous. Pilot visibility during the join-up and refueling is greatly restricted. Films of the simulated refueling mission showed the visibility to be limited to the area behind the windshield and forward of the painted sunshade. [REDACTED] stated that he understood the flight was made with the pilot using a P-1, or similar type helmet. If so, the visibility would be further restricted when using the helmet of the partial pressure suit. [REDACTED] will check on this problem of pilot vision. [REDACTED] expressed an operational requirement for accurate fuel quantity indications at the completion of refueling. The present UFP design is for the addition of main fuel tank lights to indicate half full and full conditions only. Fuel management techniques are presently considered adequate to accomplish this requirement, provided the fuel system functions properly. The pilot has a cross check method of determining whether or not the proper amount of fuel has been transferred.

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5. First flight date for aircraft 342 with the refueling capability is estimated at 15 April 1961. [REDACTED] stated that the use of a tanker must be requested of SAC as well as the request for use of the crew. One crew has been "cleared and briefed" and is available for the test program, estimated at three weeks duration. The Air Force would pay for the use of the aircraft, maintenance, and fuel. The Agency would be required to pay any per diem necessary for TAC. One or two crew chiefs would have to be cleared if the aircraft is to be stationed away from the "home base" during the test program. This is probably desirable, in any case, since the loading of special fuels will cause undue speculation. The logistics of moving our special fuel and a possible security problem by segregating a crew from normal station duties seem to warrant placing the plane

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and crew at Edwards Air Force Base and paying approximately \$1000 of per diem.

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6. At the conclusion of the meeting, [REDACTED] summarized the main items of agreement as follows:

A. Lockheed is to continue the in-flight refueling modification as outlined in ECP #101.

B. No work is to be done at the present time on installing a fuel quantity indicating system. Flight test results will determine whether or not the proposed light system is adequate.

C. No modifications will be made to the tanker aircraft.

D. No modifications will be made to the U-2C that would require mods on the tanker.

E. [REDACTED] will request tanker support for the test program through ARCTIC-5.

F. Lockheed will investigate pilot vision problems when wearing the partial pressure suit, and whether or not use of our fuel in the tanker will cause O-ring leaks.

G. First test flight is estimated at 15 April 1961.

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H. From now until completion of the test program, [REDACTED] will be the Headquarters point of contact for all records pertaining to this program.

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2-C/DR/DRD
3-ADM/DRD
4-C/COMMO/DRD
5-A/C/OPR/DRD
7-C/DR/DRD
8-DRD/AL